What is claimed is:

1. A method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate, comprising the steps of:

measuring a contour of said substrate so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning said electron beam onto said substrate, according to said depicting mode adjusted in said adjusting step.

2. The method of claim 1,

wherein said depicting mode represents each spacing between said diffraction gratings.

3. The method of claim 2,

wherein, in said adjusting step, a space between said diffraction gratings is adjusted to a small value when a concerned error, being one of said height errors, is positive, while a space between said diffraction gratings is adjusted to a large value when a concerned error, being one of said height errors, is negative.

4. The method of claim 1,

wherein said depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

5. The method of claim 4,

wherein, in said adjusting step, when a concerned error being one of said height errors is positive, said dose of said electron beam is adjusted to a large value, to such an extent that it is equivalent to an amount for depicting said concerned error, while, when a concerned error being one of said height errors is negative, said dose of said electron beam is adjusted to a small value, to such an extent that it is equivalent to an amount for depicting said concerned error.

6. The method of claim 1,

wherein said contour of said substrate, onto which said diffraction gratings are depicted, is a carved surface.

7. The method of claim 1, further comprising the step of:

measuring a thickness of a resist film formed on said substrate so as to detect thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

wherein, in said adjusting step, said phase change of said diffracted light, caused by each of said height errors and each of said thickness errors corresponding to each of said diffraction gratings, is compensated for, in response to said height errors and said thickness errors detected in said measuring steps.

8. A method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate, comprising the steps of:

measuring a thickness of a resist film formed on said substrate so as to detect thickness errors of said resist

film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning said electron beam onto said resist film, according to said depicting mode adjusted in said adjusting step.

9. The method of claim 8,

wherein said depicting mode represents each spacing between said diffraction gratings.

10. The method of claim 9,

wherein, in said adjusting step, a space between said diffraction gratings is adjusted to a small value when a concerned error, being one of said thickness errors, is positive, while a space between said diffraction gratings is

adjusted to a large value when a concerned error, being one of said thickness errors, is negative.

11. The method of claim 8,

wherein said depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

12. The method of claim 11,

wherein, in said adjusting step, when a concerned error being one of said thickness errors is positive, said dose of said electron beam is adjusted to a large value, to such an extent that it is equivalent to an amount for depicting said concerned error, while, when a concerned error being one of said thickness errors is negative, said dose of said electron beam is adjusted to a small value, to such an extent that it is equivalent to an amount for depicting said concerned error.

13. The method of claim 8,

wherein a contour of said substrate, onto which said diffraction gratings are depicted, is a carved surface.

14. A method for manufacturing a mother die of a mold utilized for molding an optical element having a predetermined diffraction structure, comprising the steps of:

measuring a contour of a substrate, on which said predetermined diffraction structure is depicted, and/or a thickness of a resist film formed on said substrate, so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate and/or thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors and/or said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors and/or each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning an electron beam onto said resist film formed on said substrate, according to said depicting mode adjusted in said adjusting step.

15. The method of claim 14, further comprising the step of:

cutting a material so as to create said substrate from said material.

16. The method of claim 14, further comprising the steps of:

forming said resist film on said substrate; and

developing said resist film, on which said diffraction gratings are depicted in said depicting step, to create said mother die having said predetermined diffraction structure.

17. The method of claim 14, further comprising the step of:

etching said mother die created in said developing step.

18. A mother die of a mold utilized for molding an optical element having a predetermined diffraction structure, said mother die being manufactured by a method comprising the steps of:

measuring a contour of a substrate, on which said predetermined diffraction structure is depicted, and/or a thickness of a resist film formed on said substrate, so as to detect height errors in surface heights in comparison with

specified values of a surface height distribution of said substrate and/or thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors and/or said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors and/or each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning an electron beam onto said resist film formed on said substrate, according to said depicting mode adjusted in said adjusting step.

19. A method for manufacturing mold utilized for molding an optical element having a predetermined diffraction structure, said mold being manufactured from a mother die and said predetermined diffraction structure being transferred to said mold from said mother die by applying electrocast processing,

said mother die being manufactured by a method comprising the steps of:

measuring a contour of a substrate, on which said predetermined diffraction structure is depicted, and/or a thickness of a resist film formed on said substrate, so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate and/or thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors and/or said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors and/or each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning an electron beam onto said resist film formed on said substrate, according to said depicting mode adjusted in said adjusting step

20. A mold utilized for molding an optical element having a predetermined diffraction structure, said mold being manufactured from a mother die and said predetermined diffraction structure being transferred to said mold from said mother die by applying electrocast processing, said mother die being manufactured by a method comprising the steps of:

measuring a contour of a substrate, on which said predetermined diffraction structure is depicted, and/or a thickness of a resist film formed on said substrate, so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate and/or thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors and/or said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors and/or each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning an electron beam onto said resist film formed on said substrate, according to said depicting mode adjusted in said adjusting step.

21. An optical element, molded by utilizing a mold and having a predetermined diffraction structure, said mold being manufactured from a mother die and said predetermined diffraction structure being transferred to said mold from said mother die by applying electrocast processing, said mother die being manufactured by a method comprising the steps of:

measuring a contour of a substrate, on which said predetermined diffraction structure is depicted, and/or a thickness of a resist film formed on said substrate, so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate and/or thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors

and/or said thickness errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors and/or each of said thickness errors corresponding to each of said diffraction gratings; and

depicting each of said diffraction gratings by scanning an electron beam onto said resist film formed on said substrate, according to said depicting mode adjusted in said adjusting step.

22. An apparatus for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate, comprising:

an electron-beam scanning section, that includes an electron-beam irradiating device to irradiate said electron beam and an electron-beam deflecting device to deflect said electron beam irradiated by said electron-beam irradiating device, to scan said electron beam onto said substrate;

a contour measuring section to measure a contour of said substrate so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate;

a depicting-mode adjusting section to adjust a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected by said contour measuring section, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and

a controlling section to control said electron-beam scanning section so as to depict each of said diffraction gratings by scanning said electron beam onto said substrate, according to said depicting mode adjusted by said depicting-mode adjusting section.

23. The apparatus of claim 22,

wherein said depicting mode represents each spacing between said diffraction gratings.

24. The apparatus of claim 23,

wherein said depicting-mode adjusting section adjusts a space between said diffraction gratings to a small value when a concerned error, being one of said height errors, is positive, while adjusts a space between said diffraction

gratings to a large value when a concerned error, being one of said height errors, is negative.

25. The apparatus of claim 22,

wherein said depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

26. The apparatus of claim 25,

wherein, when a concerned error being one of said height errors is positive, said depicting-mode adjusting section adjusts said dose of said electron beam to a large value, to such an extent that it is equivalent to an amount for depicting said concerned error, while, when a concerned error being one of said height errors is negative, said depicting-mode adjusting section adjusts said dose of said electron beam to a small value, to such an extent that it is equivalent to an amount for depicting said concerned error.

27. An apparatus for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate, comprising:

an electron-beam scanning section, that includes an electron-beam irradiating device to irradiate said electron beam and an electron-beam deflecting device to deflect said electron beam irradiated by said electron-beam irradiating device, to scan said electron beam onto said substrate;

a film-thickness measuring section to measure a thickness of a resist film formed on said substrate so as to detect thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film;

a depicting-mode adjusting section to adjust a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said thickness errors detected by said film-thickness measuring section, so as to compensate for a phase change of diffracted light caused by each of said thickness errors corresponding to each of said diffraction gratings; and

a controlling section to control said electron-beam scanning section so as to depict each of said diffraction gratings by scanning said electron beam onto said resist film, according to said depicting mode adjusted by said depicting-mode adjusting section.

28. The apparatus of claim 27,

wherein said depicting mode represents each spacing between said diffraction gratings.

29. The apparatus of claim 28,

wherein said depicting-mode adjusting section adjusts a space between said diffraction gratings to a small value when a concerned error, being one of said thickness errors, is positive, while adjusts a space between said diffraction gratings to a large value when a concerned error, being one of said thickness errors, is negative.

30. The apparatus of claim 27,

wherein said depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

31. The apparatus of claim 30,

wherein, when a concerned error being one of said thickness errors is positive, said depicting-mode adjusting section adjusts said dose of said electron beam to a large value, to such an extent that it is equivalent to an amount

for depicting said concerned error, while, when a concerned error being one of said thickness errors is negative, said depicting-mode adjusting section adjusts said dose of said electron beam to a small value, to such an extent that it is equivalent to an amount for depicting said concerned error.